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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,457	10/24/2000	Rehan M. Khan	M-8758 US	2847

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EXAMINER	
LAO, LUN S	

ART UNIT	PAPER NUMBER
2644	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/695,457	KHAN ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-38 and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *40-45* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08-04-2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

BY

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed on 08-04-2005. Claims 1-29 have been cancelled and claims 30-46 have been added. Claims 30-46 are pending.

Election/Restrictions

2. Newly submitted claims 40-45 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: because, the examiner believes that claims 40-45, drawn to a succession of musical notes is sequentially processed by digital memory circuit for performance or comparison, classified in class 84, subclass 609.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 40-45 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 30-39 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laroche (US PAT. 6,453,252) in view of Leighton et al. (US PAT. 5,432,852).

Consider claim 30, Laroche teaches that a method for fingerprinting an audio waveform, comprising:

each code corresponding to a bin and representing a portion of an audio signal, dividing the audio waveform into bins (see fig.2), for a bin, computing one or more spectral properties for that bin (see figs 1-2 and col. 1 line 40-col. 2 line 25), but Laroche does not clearly teach that a codebook which represents a vector of one or more spectral properties with a code, computing the one or more spectral features for a first group of data points within the bin; shifting some number of data points within the bin; and computing the one or more spectral features for a second group of data points within the bin; and representing the waveform with a string of hash codes from the codebook, each hash code corresponding to a segment of the waveform and temporally aligned in the string with the corresponding segment of the waveform.

However, Leighton teaches that a codebook which represents a vector of one or more spectral properties with a code (see fig.2), computing the one or more spectral features for a first group of data points (such as R.sub.011 =h(K.sub.p.sup.(3) .vertline.l.vertline.011.vertline.100) within the bin; shifting (see fig.2, such as, R0-R01) some number of data points within the bin; and computing the one or more spectral features for a second group (such as , R.sub.01 =h(R.sub.010 .vertline.R.sub.011 .vertline.l.vertline.01.vertline.101) of data points within the bin; and representing the

waveform with a string of hash codes from the codebook (see fig.2), each hash code corresponding to a segment of the waveform and inherently (because the hash function in the memory) temporally aligned in the string with the corresponding segment of the waveform (see col. 16 line 33-col. 17 line 59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Leighton into Laroche to provide an efficient method for converting a hash function into a digital signature scheme.

Consider claims 31-32 Laroche teaches that the data points in the first group overlap with data points in the second group (see col.2 line 65-col. 3 line 50); and the waveform, each group of data points of the bin is represented by a code, and wherein the code for the bin may differ for each group of data points (see fig.2, between first and second local maximum point and col. 2 line 54-col. 5 line 50).

Consider claim 33, Leighton teaches that the string of codes from the codebook (see fig.2) to form a compressed string, the codes of the compressed string and inherently (because the hash function in the memory) temporally aligned with the corresponding segment of the waveform (see fig.2 and col. 16 line 33-col.17 line 59).

Consider claim 34, Laroche teaches that a method creating (generating) a signature for an audio waveform (see abstract), comprising:

dividing the audio waveform into bins (see fig.2 and col. 2 line 54-col. 3 line 50)); for a plurality of the bins, but Laroche does not clearly teach that selecting a first group of data points within each bin, and computing one or more spectral properties for each bin based upon the first group of points within the bins of the plurality, and for the plurality,

selecting a second group of data points within each bin, and computing one or more spectral properties for each bin based upon the second set of data points within the bins of the plurality, referencing a codebook, and creating one or more signatures representing the waveform with a string of codes from the codebook, each code corresponding to a segment of the waveform.

However, Leighton teaches that selecting a first group (such as R.sub.011 =h(K.sub.p.sup.(3) .vertline.I.vertline.011.vertline.100)
of data points within each bin (see fig.2), and computing one or more spectral properties for each bin based upon the first group of points (such as R.sub.011 h(K.sub.p.sup.(3) .vertline.I.vertline.011.vertline.100) within the bins of the plurality,

and for the plurality, selecting a second group of data points (such as , R.sub.01 =h(R.sub.010 .vertline.R.sub.011 .vertline.I.vertline.01.vertline.101) within each bin, and computing one or more spectral properties for each bin based upon the second set of data points(such as , R.sub.01 =h(R.sub.010 .vertline.R.sub.011 .vertline.I.vertline.01.vertline.101) within the bins of the plurality, referencing a codebook (see fig.2), and creating one or more signatures (such as

(3)R.sub.011=h(K.sub.p.sup.(3).vertline.I.vertline.011.vertline.100),
(4)R.sub.01=h(R.sub.010.vertline.R.sub.011.vertline.I.vertline.01.vertline.101),
(5)R.sub.0=h(R.sub.00.vertline.R.sub.01.vertline.I.vertline.0.ver tline.101), and
(6) R.sub..phi.=h(R.sub.0.vertline.R.sub.1.vertline.I.vertline.101). representing the waveform with a string of codes from the codebook (see fig.2), each code corresponding to a segment of the waveform (see col.16, line 33-col. 17 line 59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Leighton into Laroche to provide an efficient method for converting a hash function into a digital signature scheme.

Consider claims 35-36, Leighton teaches that each code in the string represents the waveform over a portion of the waveform, and wherein codes are temporally inherently (because the hash function in the memory) aligned with the waveform such that the position of a code within the string corresponds to a time period of the waveform (see fig.2 and col. 10 line 60-col. 11line 61, col. 16 line33-col. 17 line 59); and the method of further comprising compressing the string such that temporal alignment between the string and the waveform is maintained (see fig.2 and col. 16 line 33-col.17 line 59).

Consider claim 37, Laroche teaches that the method of further comprising comparing a signature of the one or more signatures that initiates at a given time with a representation of an audio segment (see col. 43-col. 2 line 15).

Consider claims 38-39, Leighton teaches that the method of further comprising defining a codebook (see fig.2) which represents a vector of one or more spectral properties with a code, prior to referencing said codebook (see fig.2 and col. 16 line 33-col.17 line 59); and one or more signatures is created for each bin (such as

(3)R.sub.011=h(K.sub.p.sup.(3).vertline.I.vertline.011.vertline.100),
(4)R.sub.01=h(R.sub.010.vertline.R.sub.011.vertline.I.vertline.01.vertline.101),
(5)R.sub.0=h(R.sub.00.vertline.R.sub.01.vertline.I.vertline.0.vert line.101), and
(6) R.sub..phi.=h(R.sub.0.vertline.R.sub.1.vertline.I.vertline.101) and (see fig.2 and col. 16 line 33-col.17 line 59).

Consider claim 46, Laroche teaches that a method creating (generating) a signature for an audio waveform (see abstract), comprising:

dividing the audio waveform into bins (see fig.2 and col. 2 line 54-col. 3 line 50)); for a plurality of the bins, but Laroche does not clearly teach that selecting a first group of data points within each bin, and computing one or more spectral properties for each bin based upon the first group of points within the bins of the plurality, and for the plurality, selecting a second group of data points within each bin, and computing one or more spectral properties for each bin based upon the second set of data points within the bins of the plurality, referencing a codebook of hash values, and creating one or more signatures representing the waveform with a string of hash values from the codebook, each hash value corresponding to a segment of the waveform.

However, Leighton teaches that selecting a first group (such as R.sub.011 =h(K.sub.p.sup.(3) .vertline.I.vertline.011.vertline.100)
of data points within each bin (see fig.2), and computing one or more spectral properties for each bin based upon the first group of points (such as, R.sub.011 =h(K.sub.p.sup.(3) .vertline.I.vertline.011.vertline.100) within the bins of the plurality,
and for the plurality, selecting a second group of data points (such as , R.sub.01 =h(R.sub.010 .vertline.R.sub.011 .vertline.I.vertline.01.vertline.101) within each bin, and computing one or more spectral properties for each bin based upon the second set of data points(such as , R.sub.01 =h(R.sub.010 .vertline.R.sub.011 vertline.I.vertline.01.vertline.101) within the bins of the plurality, referencing a codebook

of hash vaule (see fig.2), and creating one or more signatures (such as (3)R.sub.011=h(K.sub.p.sup.(3).vertline.I.vertline.011.vertline.100), (4)R.sub.01=h(R.sub.010.vertline.R.sub.011.vertline.I.vertline.01.vertline.101), (5)R.sub.0=h(R.sub.00.vertline.R.sub.01.vertline.I.vertline.0.vert line.101), and (6) R.sub..phi.=h(R.sub.0.vertline.R.sub.1.vertline.I.vertline.101). representing the waveform with a string of hash value from the codebook (see fig.2), each hash value corresponding to a segment of the waveform (see col.16, line 33-col. 17 line 59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Leighton into Laroche to provide an efficient method for converting a hash function into a digital signature scheme.

Response to Amendment

6. Applicant's arguments with respect to claims 30-38 and 46 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Moses (US PAT. 6,571,144) is cited to show other related the Method and system for analyzing digital audio files.

9. Any response to this action should be mailed to:

Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(703) 872-9306

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501 The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501 L.S.
Date 11-03-2005

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600